

# **DOING IT NATURALLY**

## **Converting Pine Hardwood Stands To Pure Pine**

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All foresters in Central and South Alabama have seen it-those once productive pine sites which have reverted to mixed pine and hardwoods because of years of improper cutting techniques and failure to use prescribed fire. At first glance, the landowner may think that the conversion of these sites to pine would be too expensive, but there are alternatives, “naturally!”

### **The Pine Overstory**

A distinction should be made between pine stands that have a history of high grading and those that have been cut to promote the production of sawtimber. High graded stands with only formerly suppressed pine remaining in the overstory have little or no chance of being regenerated by natural means. On the other hand, stands that have been cut with a reasonable amount of foresight in growing pine sawtimber, while varying considerably as to stand density, normally have more than enough overstory to make natural regeneration a reasonable alternative in establishing a new stand. The one characteristic common to most of these stands is the concentration of volume in large diameter stems with a narrow range of diameter distributions, and a definite need for younger growing stock.

A judgement call is necessary to determine whether there is a sufficient number and quality of the desired species to produce adequate seed once work is started to control hardwood competition. A rule of thumb is to make sure there is at least enough volume in the overstory not only to produce sufficient seed, but to contribute substantially to site preparation and planting costs in case natural regeneration is considered inadequate following your final assessment. The ideal situation is a heavy enough overstory to allow the removal of poor quality or overmature pine either as a separate sale or in conjunction with an all merchantable hardwood sale, and still leave five to ten good seed producers per acre. The pine sale, however small, will add to the proceeds from the hardwood sale, if any, and will expose additional bare soil for a more receptive seed bed.

## **The Hardwood Understory**

Once the pine overstory has been favorably evaluated, the diameter distribution of stems in the hardwood understory is the next consideration. Hardwood stems may vary from mostly merchantable, to mostly premerchantable, to a mixture of both. Merchantable stems should of course be sold if the volume is operable. Premerchantable stems come in two size classes with respect to effective control measures: 1) One to three inch stems that can be reduced to sprouts with a single well-planned fire, and 2) Four to seven inch stems that will in most cases require more than one burn, possibly combined with other control methods to get complete control. The mixture of understory hardwood stems will determine whether natural regeneration can be realistically anticipated within three years to ten years, which could be in itself the basis for considering other means of regeneration.

Once the decision is made to consider natural regeneration as a real possibility, the most favorable condition of a given pine-hardwood stand would be a reasonably good volume of both species (2 to 4 MBM/acre of pine, Doyle scale, and 3 to 10 Cords/acre of hardwood), with very few pre-merchantable hardwood stems. Such a stand condition would promote a hot fire and exposure of bare soil logging operations, both of which contribute to a good seed bed.

The other extreme in stand condition would be a barely operable volume of pine sawtimber (1 to 2 MBM/acre, Doyle scale) and a heavy understory of four to seven inch hardwood stems. Obviously several controlled fires over a period of years or some means of chemical control would be needed under these conditions to effectively reduce hardwood competition. Whether these prolonged efforts or increased costs in hardwood control can be justified in a stand with a sparse overstory is a decision that should be based on the needs, objectives, and financial capabilities of the owner. The best management decision in this situation could very well be to clearcut and plant.

A wide spectrum of stand conditions can be found between these two extremes. Each condition will require some variation in treatment, including in some instances the use of chemicals as a justifiable expense in reducing hardwood competition. The first step under any stand condition should be the application of whatever method of hardwood control you choose whether it be fire, chemicals, or a combination of both.

## **The Regeneration Cut**

Keep in mind that you have made a firm decision that younger growing stock is needed, and plan your regeneration cut accordingly. As opposed to a selective thinning in a stand that is to be managed for future growth to achieve a certain end-product, a regeneration cut should be the heaviest possible cut, leaving good large-crowned seed producers with at least an operable volume for future harvest (normally not less than 1 MBM/acre, Doyle scale). Any regeneration cut (pine and/or hardwood) should be postponed until premerchantable hardwood stems have been effectively controlled (i.e. reduced to sprouts).

There is more than one strategy in timing your last scheduled fire and regeneration cut. A stand burned during the spring of 1983 and logged during 1984 will benefit from 1983 seed already on the ground prior to logging, and from 1984 seed that will fall on exposed soil after logging. One disadvantage of this schedule is that it allows hardwood sprouts one season's growth before the 1983 seed crop. A schedule that would reduce competition from hardwood sprouts would be to burn during late summer or early fall of 1983 followed by 1984 logging. Almost any schedule will allow the benefit of at least two seed crops, and on an exceptionally clean seed beds, three or four. While timing your last fire and logging operation ahead of forecasts for heavy seed crops is certainly a good idea, it does not seem to be absolutely necessary.

### **Evaluating Results**

Two to three years following the logging operation seems to be the ideal time for making a final assessment of the new stand. At this age, seedlings originating from first-year seed are normally large enough to give you a feeling of confidence that they are well established. On exceptionally clean seed beds you may find several size classes of seedlings, all the way down to recently germinated seed. Extremely young seedlings should probably be eliminated from any final determinations of seedlings per acre, since their survival is uncertain. Any systematic line plot sample can be used to determine the level of stocking, with a minimum of one plot per acre recommended for a reliable sample. One-hundredth acre circular plots can be accurately tallied by one man. The number of seedlings per acre and their general dispersment should be the final considerations in making a decision to carry the new stand to rotation age.

Natural pine regeneration has for the most part always been considered as "happening by chance" and as a result, a "free" bonus to the landowner, thanks to nature's unpredictable behavior. Deliberate work to increase the possibility of getting natural regeneration cannot be considered cost-free. In addition to the expense of one or more prescribed burns, more careful supervision of any logging operation is a necessary expense to insure the protection of seed trees, and a final expense will be incurred with the seedling survey. These combined expenses could run as much as \$20 per acre and should be considered the cost of establishing the new stand, even though these costs may be off-set by a pine an/or hardwood sale in the beginning.

In your final assessment, if an inadequate stocking of seedlings brings on the need for some means of artificial regeneration, several direct benefits of your work should help justify the waiting period and expense: 1) Lower site preparation costs due to reduced hardwood stems, 2) Better internal access to the stand which may lower logging costs and increase stumpage prices, 3) At least some increase in volume and value due to growth of the pine overstory.

Forestry may be broadly defined as the art and science of man's helping to improve what nature has always done alone, that is, regenerating and growing crops of timber. A little expense and effort directed toward making natural regeneration a good probability rather than a chance happening can result in good well-stocked pine stands with minimum costs to the landowner.

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